

A TAXONOMIC STUDY OF THE GENUS *PEALIUS* QUAINANCE & BAKER (HOMOPTERA: ALEYRODIDAE) IN INDIA¹

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Martin (1999) concluded that *Odontaleyrodes* Takahashi was a junior synonym of *Pealius* Quaintance & Baker. Therefore, detailed study was undertaken on the type specimens of the Indian species of *Pealius* and *Odontaleyrodes*. The study confirmed the observation of Martin (1999) that the two genera are congeneric. Hence, *O. indicus* David, *O. elongatus* David *et al.*, *O. nilgiriensis* David, *O. sairandhryensis* Meganathan & David and *O. splendens* David *et al.* are assigned to the genus *Pealius* Quaintance & Baker. Further, examination of the type specimens of *O. artocarp* (David *et al.*), *O. selvakumarami* (David *et al.*) and *Pealius nagerkoilensis* Jesudasan & David revealed that they are identical in their taxonomic characteristic features; it was concluded that these species are synonymous. In the light of these findings, a revised key to the genus *Pealius* has been provided.

Key words: Whiteflies, Aleyrodidae, Homoptera, *Pealius*, *Odontaleyrodes*

INTRODUCTION

Quaintance and Baker (1914) erected the genus *Pealius* for *Aleyrodes maskelli* Bemis. Takahashi (1954) erected the genus *Odontaleyrodes* for two species of *Pealius* namely *P. akebiae* (Kuwana) and *P. rhododendri* Takahashi from Japan. Martin (1999) synonymised *Odontaleyrodes* with *Pealius*. Hence, detailed study was undertaken on the type specimens of the Indian species of *Pealius* and *Odontaleyrodes*. The study confirmed the observation of Martin (1999) that the two genera are congeneric. Further, the study resulted in synonymisation of 2 species of *Odontaleyrodes* with *Pealius* and 5 new combinations. The details are as follows:

1. *Pealius azaleae* (Baker & Moles)

Aleyrodes azaleae Baker & Moles 1920: *Proc. Ent. Soc. Washington* 22: 81-83.

Pealius azaleae (Baker & Moles) Takahashi 1954: *Insecta Matsumurana* 18: 50.

Neopealius nilgiriensis David & Subramaniam 1976: *Rec. zool. Surv. India* 70: 204-205.

Neopealius nilgiriensis (David & Subramaniam), Martin 1999: *CSIRO Entomology Technical Paper* 38: 92. (Synonymised by Martin 1999).

David and Subramaniam (1976) described a new species *Neopealius nilgiriensis* which was synonymised with *Pealius azaleae* (Baker & Moles) by Martin (1999).

Distribution: INDIA: Tamil Nadu: Ootacamund (The Nilgiris) (David and Subramaniam 1976).

Host Plant: *Azalea indica* (David and Subramaniam 1976).

Material examined: Holotype puparium, India: Tamil Nadu: Ootacamund, *Neopealius nilgiriensis* on *Azalea indica*, 3.vii.1969, B.V. David (loaned by Prof. B.V. David).

2. *Pealius elongatus* (David, Sundararaj & Regu) comb. nov.

Odontaleyrodes elongatus David *et al.* 1991. *J. Insect. Sci.* 4(2): 117-119.

David *et al.* (1991) provided a detailed description of the species.

Distribution: INDIA: Tamil Nadu: Kunnathoor (David *et al.* 1991).

Host Plant: *Ailanthus excelsa* (David *et al.* 1991).

Material examined: Holotype puparium, India: Tamil Nadu: Kunnathoor, *Odontaleyrodes elongatus* on *Ailanthus excelsa*, 25.i.1989, K. Regu (loaned by Prof. B.V. David).

3. *Pealius indicus* (David) comb. nov.

Odontaleyrodes indicus David 1972: *Oriental Ins.* 6(3): 309.

David (1972) gave adequate description of the species.

Distribution: INDIA: Karnataka: Saklespur (David 1972).

Host Plant: Unidentified shrub.

Material examined: Holotype puparium, India: Karnataka: Saklespur, on unidentified shrub, 12.viii.1971, B.V. David (loaned by Prof. B.V. David).

4. *Pealius nagerkoilensis* Jesudasan & David

Pealius nagerkoilensis Jesudasan & David 1991: *Oriental Ins.* 25: 320.

Odontaleyrodes artocarp David, Sundararaj & Regu 1991 syn. nov. *J. Insect Sci.* 4(2): 117-119.

Odontaleyrodes selvakumarani David, Sundararaj & Regu 1991 syn. nov. *J. Insect Sci.* 4(2): 117-119.

The examination of the holotypes of *Odontaleyrodes artocarp* David *et al.*, *O. selvakumarani* David *et al.* and *Pealius nagerkoilensis* Jesudasan & David revealed that they are identical in their taxonomic characteristic features and concluded that these species are synonymous. Therefore, *O. artocarp* (David *et al.*), *O. selvakumarani* (David *et al.*) are proposed as junior synonyms of *P. nagerkoilensis* Jesudasan & David.

Distribution: INDIA: Tamil Nadu: Kunnathoor, Madurai (David *et al.* 1991); Nagercoil (Jesudasan & David 1991); Kotagiri, Elaimalai, Jamunamarathur hills; Karnataka: Kudremukh National Park, Tal Cauvery (new distribution records).

Host Plants: *Artocarpus hirsutus*, *A. incisa*, *Chickrassia velutina* (David *et al.* 1991); *Loranthus* sp. (Jesudasan and David 1991); *Ageratum conyzoides*, *Butea monosperma*, *Cestrum aurantiacum*, *Derris* sp., *Osbeckia reticulata*, *Gnidia glauca*, *Madhuca neriifolia*, *Salvia splendens* (new host records).

Material examined: India: Tamil Nadu: Nagercoil, Holotype puparium, *Pealius nagerkoilensis* on *Loranthus* sp., 27.xii.1985, Augustine; Kunnathoor, Holotype puparium, *Odontaleyrodes artocarp* on *Artocarpus hirsutus*, 16.vi.1989, K. Regu; Cumbum, Holotype puparium, *Odontaleyrodes selvakumarani*, on *Chickrassia velutina*, 7.iv.1988, S. Selvakumaran (all loaned by Prof. B.V. David); Karnataka: Kudremukh National Park, 2 puparia, on *Madhuca neriifolia*, 12.viii.2001, A.K. Dubey; Kudremukh National Park, 2 puparia, on unidentified plant, 8.viii.2001, A.K. Dubey; Tal Cauvery, 2 puparia, on *Butea monosperma*, 24.iii.2001, A.K. Dubey; Kemmangundi, 5 puparia, on *Gnidia glauca*, 1.i.2001, A.K. Dubey; Tamil Nadu: Elaimalai, 1 puparium on unidentified plant, 17.iii.2001, A.K. Dubey; 2 puparia, on *Ageratum conyzoides*, Kotagiri, 10.iii.2001, A.K. Dubey; Kodaikanal, 3 puparia, on *Osbeckia reticulata*, 13.iii.2001, A.K. Dubey; Ootacamund, 4 puparia, on *Cestrum aurantiacum*, 9.iii.2001, A.K. Dubey; 1 puparium, on *Salvia splendens*, Kotagiri, 10.iii.2001, A.K. Dubey; Jamunamarathur hills, 2 puparia, on unidentified plant, 19.iii.2001, A.K. Dubey.

5. *Pealius nilgiriensis* (David) comb. nov.

Odontaleyrodes nilgiriensis David 1972 : *Oriental Ins.* 6(3): 309-312.

The description by David (1972) is adequate and no further description is necessary.

Distribution: INDIA: Tamil Nadu: Ootacamund (The Nilgiris) (David 1972).

Host Plant: Unidentified twiner (David 1972).

Material examined: India: Tamil Nadu: Ootacamund (The Nilgiris), Holotype puparium, on unidentified twiner, 3.viii.1969, B.V. David (loaned by Prof. B.V. David).

6. *Pealius sairandhryensis* (Meganathan & David) comb. nov.

Odontaleyrodes sairandhryensis Meganathan & David 1994: *FIPPA Entomology Series* 5: 47.

The description provided by Meganathan and David (1994) is adequate.

Distribution: INDIA: Kerala: Silent Valley (Meganathan & David 1994).

Host Plant: *Oreocnida integrifolia* (Meganathan & David 1994).

Material examined: India: Kerala: Silent Valley, Holotype puparium, on *Oreocnida integrifolia*, 2.ii.1991, P. Meganathan.

7. *Pealius simplex* (Singh)

Aleurocanthus simplex Singh 1931: *Mem. Dept. Agric. India* 12(1): 69.

Dialeurodes glomerata Singh 1931: *Mem. Dept. Agric. India* 12(1): 39. (Synonymised by Jesudasan & David 1991).

Pealius indicus David & Subramaniam 1976: *Rec. zool. Surv. India* 70: 206. (Synonymised by Jesudasan & David).

Detailed descriptions were provided by Singh (1931); David and Subramaniam (1976), and Jesudasan and David (1991); no additional description is needed, as the information provided by them is adequate.

Distribution: INDIA: Bihar (Pusa) (Singh 1931); Tamil Nadu: Coimbatore, Ootacamund (the Nilgiris) (David and Subramaniam 1976); Padappai (Jesudasan and David 1991).

Host Plants: *Ficus bengalensis*, *F. glomerata* (Singh 1931), *Azalea indica* (David and Subramaniam 1976).

Material examined: India: Karnataka: Kudremukh National Park, 10 puparia, on unidentified shrub, 12.viii.2001, A.K. Dubey.

Comments: The puparium collected from the upper surface of leaves were larger in size; margin smooth and subdorsum with minute setae. The puparium from the lower surface of leaves were rather small; margin deflexed at several places and subdorsum with long setae. The nature of leaf surface is apparently responsible for this kind of morphological diversity. Similar observations were also recorded in *P. simplex* by David and Subramaniam (1976), and Jesudasan and David (1991).

8. *Pealius spina* (Singh)

Dialeurodes spina Singh 1931: *Mem. Dept. Agric. India* 12(1): 27.

Aleuroplatus spinus Takahashi 1952: *Mushi* 24: 23.
Pealius spina David and Subramaniam 1976: *Rec. zool. Surv. India* 70: 209.

The description of the species by Singh (1931), Takahashi (1952), and David and Subramaniam (1976) are adequate and no further addition is necessary.

Distribution: INDIA: Bihar: Mirpur Khas, Daulatpur (Singh 1931); Tamil Nadu: Salem (David and Subramaniam 1976); Padappai (Jesudasan and David 1991); Kerala: Kozhikode (new distribution record).

Host Plants: *Ficus religiosa* (Singh 1931); *F. arnotiana* (new host record).

Material examined: India: Kerala: Kozhikode, 3 puparium on *Ficus religiosa*, 17.iii.2002, A.K. Dubey; Kozhikode, 10 puparia, on *Ficus arnotiana*, 10.iii.2001, K. Regu.

9. *Pealius spinosus* Jesudasan & David

Pealius spinosus Jesudasan & David 1991: *Oriental Insect. Sci.* 25: 322-323.

Jesudasan and David (1991) provided a detailed description of the species.

Distribution: INDIA: Tamil Nadu: Erode (Jesudasan and David 1991); Karnataka: Yellapur (new distribution record).

Host Plant: Unidentified tree.

Material examined: India: Tamil Nadu: Erode, Holotype puparium, *Pealius spinosus*, on unidentified tree, 8.x.1985, Augustine, (loaned by Prof. B.V. David); Karnataka: Yellapur, 1 puparium, on unidentified tree, 11.x.2001, A.K. Dubey.

10. *Pealius splendens* (David, Sundararaj & Regu) comb. nov.

Odontaleyrodes splendens David, Sundararaj & Regu 1991: *J. Insect. Sci.* 4(2): 117-119.

The description by David *et al.* (1991) is adequate.

Distribution: INDIA: Kerala: Tripunithura (David *et al.* 1991).

Host plant: *Tectona grandis* (David *et al.* 1991).

Material examined: India: Kerala: Tripunithura, Holotype puparium, *Odontaleyrodes splendens*, on *Tectona grandis*, 30.vii.1987, B.V. David (loaned by Prof. B.V. David).

KEY TO THE INDIAN SPECIES OF *PEALIUS*

1. A dark brown patch on median area of first and second abdominal segments absent 2
- A dark brown patch on median area of first and second abdominal segment present
 *cinnamomi* (Sundararaj & David 1991)
2. A brown patch cephalad of cephalic seta absent 3
- A brown patch cephalad of cephalic seta present
 *indicus* (David 1972)

3. Submarginal setae present 4
- Submarginal setae absent
 *walayarensis* (Jesudasan & David 1991)
4. A submedian row of papillae present 5
- A submedian row of papillae absent 8
5. Setae on mesothorax/metathorax present 6
- Setae on mesothorax/metathorax absent 7
6. Setae present on meso- and metathorax; submedian papillae on cephalothorax and abdomen present
 *sairandhryensis* (Meganathan & David 1994)
- Setae present only on metathorax; submedian papillae only on abdomen present *misrae* (Singh 1931)
7. Puparium elliptical, 0.60-0.68 mm long, 0.40-0.47 mm wide, margin with 22 crenulations in 0.1 mm; vasiform orifice subrectangular (30 x 37.5 µm)
 *splendens* (David, Sundararaj & Regu 1991)
- Puparium elongately oval, 0.83 mm long, 0.44 mm wide; margin with 15 crenulations in 0.1 mm; vasiform orifice subcordate (47.5 x 37.5 µm)
 *elongatus* (David, Sundararaj & Regu 1991)
8. Transverse moulting suture not reaching margin 9
- Transverse moulting suture reaching margin 12
9. Thoracic tracheal pore not marked by small rounded teeth, subcircular rim near thoracic tracheal pore absent 10
- Thoracic tracheal pore marked by small rounded teeth, a subcircular rim near thoracic tracheal pore present
 *azaleae* (Baker & Moles 1920)
10. Submarginal setae less than 13 pairs and not in a row 11
- Submarginal setae in 13 pairs and in a row
 *bengalensis* (Peal 1903)
11. Puparium roundly elliptical; dorsum not tuberculate; 10 pairs of subdorsal and 2 pairs of submarginal setae evident
 *spina* (Singh 1931)
- Puparium oval; dorsum tuberculate; 9 pairs of subdorsal and 5 pairs of submarginal setae; shape and length of setae vary depending on hairy or glabrous nature of leaf surface on which it develops *simplex* (Singh 1931)
12. First abdominal setae present 13
- First abdominal setae absent *nilgiriensis* (David 1972)
13. Tracheal combs not discernible
 *nagerkoilensis* (Jesudasan & David 1991)
- Tracheal combs discernible
 *schimae* (Takahashi 1950)

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